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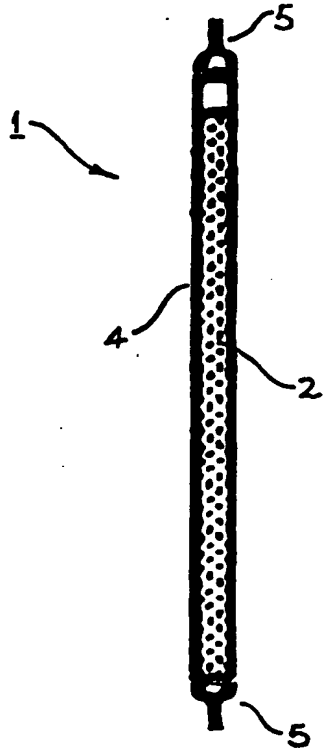
(54) Title: METHOD AND APPARATUS FOR PRODUCING A FLAVOURED BEVERAGE

(57) Abstract

A flavouring receptacle (1) contains a predetermined portion of flavouring agent (2) for sale and use in conjunction with a compatible pre–packaged unflavoured beverage of appropriate relative volume. A consumer is able to select and mix the flavouring agent (2) with the unflavoured beverage at the point of sale to produce a flavoured beverage for immediate consumption. The flavouring receptacle (1) is generally elongate and tubular in shape and is thereby adapted for subsequent use as a straw through which to consume the flavoured beverage.



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TITLE: **METHOD AND APPARATUS FOR PRODUCING A FLAVOURED BEVERAGE**

FIELD OF THE INVENTION

The present invention relates generally to prepackaged or bottled beverages and more particularly to the flavouring of such beverages.

BACKGROUND OF THE INVENTION

The invention has been developed primarily for use in relation to flavoured milk packaged in cartons for immediate consumption and will be described with reference to this application. It will be appreciated, however, that the invention is not limited to this particular use.

It is well known that plain milk is sold at a variety of retail outlets in small sized "TETRA-PACK" type cartons intended for immediate consumption. Flavoured milk is sold in the same way. Due to pricing constraints applied in Australia and elsewhere, the profit for retailers of plain milk sold in this form is relatively marginal. The same pricing constraints do not apply to flavoured milk and so these products are typically priced substantially higher, often by a factor of three or more. However, the wholesale price is also substantially more than that of plain milk, making the flavoured product in this form relatively expensive for both the retailer and the consumer. A more cost effective flavouring process would enhance profit margins for the retailers and reduce the price to consumers.

A further problem with prepackaged beverages, and in particular with milk products sold in TETRA-PACK cartons is that of hygiene. When the carton is opened, the lip is necessarily contacted by the hands of the user, which may not have been recently cleaned.

Moreover, the carton will normally have been handled many times prior to that during packing, transportation and stacking on shelves. If the consumer then drinks directly from the lip, a hygiene problem is immediately apparent.

In an attempt to address this problem, straws are often used. However, this is not always successful. Retailers periodically run out of stock and are unable to supply the straws. In any case, the straws themselves are often handled or stored in unhygienic conditions. A further problem is that because the retailer is not normally able to charge an additional price for straws, their supply effectively further reduces the profit margin. Consequently, there is no incentive for the retailer to supply a straw with each carton, and the consumer will often not think to ask.

In order to address the particular hygiene problem associated with the handling of straws, the technique of providing individually pre-wrapped straws is also known. However, these are even more expensive and consequentially, there is even less incentive for retailers to stock and diligently provide them to customers. Accordingly, they have not found widespread acceptance. Many of the factors outlined above apply not only to milk, but to many other beverages such as mineral waters, cordials, carbonated beverages, colas and the like.

A further problem relates to stock and inventory control. Most ranges of milk, carbonated mineral waters, cordials, and other beverages are produced in a variety of different flavours. Consequently, a considerable amount of valuable fridge space is required in retails outlets in order to provide adequate stocks of the full range.

It is an object of the present invention to overcome or substantially ameliorate at least some of these disadvantages of the prior art.

DISCLOSURE OF THE INVENTION

Accordingly, the invention as presently contemplated provides a flavouring receptacle adapted to contain a relatively concentrated flavouring agent for use with a relatively unflavoured plain beverage, whereby mixing of the flavouring agent with the plain beverage enables a consumer to produce a flavoured beverage.

Preferably, the flavouring receptacle is adapted to be sold together with a prepackaged beverage of appropriate predetermined relative volume, thereby enabling the consumer to produce the flavoured beverage for immediate consumption at the point of sale.

Preferably also, the flavouring receptacle is generally tubular, and adapted to be opened at both ends. The tubular receptacle is preferably proportioned such that, with the ends open, the receptacle can be used as a straw once the flavouring agent has been added to the beverage. In this embodiment, the height of the flavouring receptacle is preferably greater than the height of the beverage container to avoid loss of the straw within the container.

The flavouring agent is preferably sealed within the receptacle by means of perforated, removable or frangible end caps. In one embodiment, the receptacle is hygienically sealed in an outer wrapper adapted for removal by the consumer immediately prior to use. The flavouring is preferably in the form of a powder, a liquid, crystals or tablets.

The beverage is preferably plain milk, prepackaged in a "TETRA-PACK" type carton.

In a particularly preferred aspect, the invention consists in a flavouring receptacle containing a predetermined portion of flavouring agent for sale and use in conjunction with

a compatible pre-packaged unflavoured beverage of appropriate relative volume, whereby a consumer is able to select and mix the flavouring agent with the unflavoured beverage at the point of sale to produce a flavoured beverage for immediate consumption, said flavouring receptacle being generally elongate and tubular in shape and being adapted for subsequent use as a straw through which to consume the flavoured beverage.

Preferably, the flavouring agent takes the form of a plurality of relatively small solid granules, retained within the straw by liquid permeable retaining means. Advantageously, this arrangement allows the consumer to control the intensity of flavouring delivered to the beverage, according to the rate at which the liquid is sucked through, and hence the "dwell time" within, the straw. This also obviates the need for the consumer to dispense the flavouring agent into the beverage as a separate manual process step.

In the preferred embodiment, the retaining means include a perforated cap disposed at each end of the straw. The perforations are preferably configured to be sufficiently small to retain the flavouring granules within the straw, and sufficiently large to allow relatively unimpeded passage of liquid through the straw. Each end cap preferably takes the form of an inwardly extending conical formation, to provide an increased surface area for the perforations, and hence a greater cross-sectional flow area for the liquid to pass through into the straw.

Preferably, the internal region of the straw is not filled entirely with flavouring granules, so that a free space is left to facilitate mixing of the flavouring with the plain beverage.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:-

Figure 1 is a side view showing a standard TETRA-PACK type plain milk carton;

Figure 2 is a side view showing a flavouring receptacle for use with the plain milk carton of Figure 1 according to a first embodiment of the invention;

Figure 3 is a side view showing a flavouring receptacle in the form of a straw, according to a second embodiment of the invention;

Figure 4 is an enlarged perspective view showing one end of the flavour straw of Figure 3, including a detail of the perforated end cap; and

Figure 5 is a plan view of the end cap of Figure 4.

PREFERRED EMBODIMENT OF THE INVENTION

Referring to the drawings, the invention provides a flavouring receptacle 1 adapted to contain a predetermined measure of relatively concentrated flavouring agent 2 for use with a relatively unflavoured plain beverage. In this case, the plain beverage is milk, prepacked in a TETRA-PACK type carton 3.

In a first embodiment of the invention as shown in Figure 2, the flavouring receptacle 1 takes the form of a tube 4 having removable tear-off ends 5. The tube is initially packaged within a surrounding hygienically sealed disposable wrapper (not shown). The interior volume of the tube is adapted to contain a predetermined measure of the flavouring concentrate, appropriate for the volume of beverage with which the receptacle is intended to be sold. The overall shape and proportions of the tube enable its use as a straw once the flavouring agent has been removed. In cases where larger volumes of flavouring are

required, the tube may be formed with an elliptical cross-sectional profile so that subsequent use as a straw is still feasible.

In use, it is envisaged that the consumer would purchase a carton of unflavoured beverage such as milk together with a desired flavouring initially contained with the tubular receptacle or "flavour straw". The outer disposable wrapping is then removed and the ends 5 torn from the receptacle. The consumer then empties the flavouring concentrate into the carton to produce the flavoured beverage which is then consumed through the flavouring receptacle, functioning as a straw. If necessary, to ensure complete discharge of the flavouring, the drinker can initially blow through the straw. Advantageously, the strength of the beverage can be varied by altering the amount of flavouring to be added.

In a second embodiment of the invention as shown in Figures 3 to 5, the flavouring agent takes the form of a plurality of solid granules 10. The granules are retained within the straw by retaining means in the form of end caps 11. The end caps incorporate perforations 12 sufficiently small to contain the flavouring granules and sufficiently large to allow relatively unimpeded passage of liquid through the straw. The end caps may be retained in place by an interference fit, circumferential ridges, a suitable adhesive, heat shrinkage, plastic welding or any combination of these methods.

As best seen in Figure 4, the end caps are generally conical in shape to provide a larger surface area relative to flat end caps of comparable diameter. The larger surface area allows a larger number of perforations, so as to increase the effective cross sectional flow area for the liquid to pass through, into the straw. This increase in surface area will be apparent from Figure 5, which is a plan view of the conical end caps, but also shows the substantially elongate perforations projected onto a plane perpendicular to the straw as

circular apertures of significantly smaller size. The end caps may also include additional filtration elements, layers or materials as required.

Advantageously, this embodiment of the invention provides the user with a degree of control over the intensity of the flavouring, according to the rate at which the beverage is sucked through, and hence the dwell time of the liquid within the straw. This embodiment of the invention also has the advantage that the consumer is not required to open the flavouring receptacle and manually dispense the contents into the main beverage, as a separate preparation step prior to consumption. The arrangement is thus considerably less time consuming and more convenient. In this embodiment of the invention, it has also been found that by only partially filling the straw with flavouring granules, the resultant free space provides for enhanced agitation of the granules and hence improved mixing which in turn results in a more uniform distribution of flavouring within the beverage.

The flavouring receptacle or straw is preferably produced from a wax coated paper. It will be appreciated, however, that extruded plastics or any other suitable materials may be used. Moreover, although the invention has been developed primarily for use in relation to flavoured milk, it is obviously applicable to other forms of flavoured drinks such as mineral waters, sodas, milkshakes, cordials, alcoholic beverages, and the like. It may also be applied to hot beverages such as tea, coffee, hot chocolate, etc. Other possible additives include vitamin supplements, oral pharmaceuticals, and the like.

It is further envisaged that in alternative embodiments, the flavouring concentrate may be deposited on the inner surface of the tube or straw, for example in crystalline form, for progressive dissolution into the beverage as it passes upwardly through the straw toward the drinkers mouth. In that case, the separate step of initially depositing the flavouring into the beverage would not be required.

In another variation, the flavouring receptacle may also contain filtration elements, such as small activated carbon filter cartridges particularly for use with beverages which may have not been packaged under sterile conditions. This form of the invention may also be used, for example, to produced a flavoured and purified beverage directly from domestic tap water.

In yet a further variation, a tubular receptacle in the form of a straw incorporating filtration elements but without flavouring may be provided as a simple and effective means of water purification. This variation is particularly applicable to hikers, campers or where a domestic water supply contains impurities.

Because the primary forms of the invention contemplate the supply of a flavour straw together with a prepackaged beverage to the consumer, many of the hygiene problems previously associated with this form of packaging are avoided. Furthermore, by permitting the sale of a relatively inexpensive unflavoured beverage together with an effective flavouring agent integrated with a straw, it is envisaged that retailers will be able to achieve substantially enhanced profit margins over the current form of sale of both flavoured and unflavoured beverages, and particularly milk. Furthermore, the consumer can be provided with a greater variety of flavour selection, optionally involving the combination of a number of different flavours, and the possibility of applying the flavouring at any desired concentration. Also, because the flavouring component of the beverage will normally have a longer shelf life, particularly in the case of milk, if any unused product needs to be discarded, wastage of the flavouring component at least can be avoided. Also, because the retailer can stock a relatively large number of plain beverages in the valuable fridge space, with the flavouring receptacles stored elsewhere, stock and inventory control is greatly

simplified. In all these respects, the invention represents a commercially significant improvement over the prior art.

Although the invention has been described with reference to specific examples, it will be appreciated by those skilled in the art that the invention may be embodied in many other forms.

CLAIMS

1. A flavouring receptacle adapted to contain a relatively concentrated flavouring agent for use with a relatively unflavoured plain beverage, whereby mixing of the flavouring agent with the plain beverage enables a consumer to produce a flavoured beverage.

2. A flavouring receptacle according to claim 1, adapted to be sold together with a prepackaged beverage of appropriate predetermined relative volume, thereby enabling the consumer to produce the flavoured beverage for immediate consumption at the point of sale.

3. A flavouring receptacle according to claim 1 or claim 2, wherein the receptacle is generally tubular, and is open or adapted to be opened at both ends.

4. A flavouring receptacle according to claim 3, wherein the receptacle is tubular and proportioned such that, with the ends open, the receptacle can be used as a straw.

5. A flavouring receptacle according to claim 4, wherein the height of the tubular receptacle is greater than the height of the beverage container, thereby to avoid inadvertent loss of the straw within the container.

6. A flavouring receptacle according to claim 5, wherein the flavouring agent is sealed within the receptacle by means of perforated, removable or frangible end caps.

7. A flavouring receptacle according to any one of the preceding claims, being hygienically sealed in an outer wrapper adapted for removal by the consumer immediately prior to use.

8. A flavouring receptacle according to any one of the preceding claims, wherein the flavouring is in the form of a powder, a solid, a liquid, crystals, granules or tablets.

9. A flavouring receptacle according to any one of the preceding claims, wherein the beverage is milk, prepackaged in a carton.

10. A flavouring receptacle containing a predetermined portion of flavouring agent for sale and use in conjunction with a compatible pre-packaged unflavoured beverage of appropriate relative volume, whereby a consumer is able to select and mix the flavouring agent with the unflavoured beverage at the point of sale to produce a flavoured beverage for immediate consumption, said flavouring receptacle being generally elongate and tubular in shape and being adapted for subsequent use as a straw through which to consume the flavoured beverage.

11. A flavouring receptacle according to claim 10, wherein the flavouring agent takes the form of a plurality of relatively solid granules, retained within the straw by liquid permeable retaining means.

12. A flavouring receptacle according to claim 11, wherein the flavouring agent takes a form whereby the intensity of flavouring delivered to the beverage can be controlled by the consumer according to the rate at which the liquid is drawn through, and hence the dwell time within, the straw.

13. A flavouring receptacle according to claim 11 or claim 12, wherein the retaining means include perforated end caps disposed respectively at opposite ends of the straw.

14. A flavouring receptacle according to claim 13, wherein said perforations are configured to be sufficiently small to retain flavouring granules within the straw, and sufficiently large to allow relatively unimpeded passage of liquid through the straw.

15. A flavouring receptacle according to claim 14, wherein at least one of said end caps takes the form of an inwardly extending conical formation configured to provide a relative increase in surface area for the perforations and hence a relatively greater cross sectional flow area for the liquid to pass to or from the straw, in comparison to a flat cap of the same diameter.

16. A flavouring receptacle according to any one of claims 13 to 15, wherein said end caps are retained in the ends of the straw by means of an interference fit.

17. A flavouring receptacle according to any one of claims 13 to 16, wherein said end caps are retained in the ends of the straw by means of circumferential locating ribs.

18. A flavouring receptacle according to any one of claims 13 to 17, wherein said end caps are retained in the ends of the straw by means of heat shrinkage.

19. A flavouring receptacle according to any one of claims 10 to 18, wherein the internal region of the straw is not filled entirely with flavouring, whereby a residual free space facilitates mixing of the flavouring with the plain beverage whilst passing through the straw.

20. A flavouring receptacle according to any one of the preceding claims, wherein the flavouring agent is selected from the group of chocolate, strawberry, vanilla, banana, caramel, or coffee flavouring.

21. A flavouring receptacle according to any one of the preceding claims, wherein the flavouring agent includes a vitamin supplement.

22. A flavouring receptacle according to any one of the preceding claims, wherein the flavouring agent includes a pharmaceutical adapted for oral administration.

23. A flavouring receptacle according to any one of the preceding claims, wherein the receptacle is formed from a wax coated paper.

24. A flavouring receptacle according to any one of the preceding claims, wherein the receptacle is formed from a plastics material.

25. A flavouring receptacle according to any one of the preceding claims, wherein the receptacle contains filtration elements.

26. A flavouring receptacle substantially as hereinbefore described with reference to any one of the embodiments of the invention as illustrated in the accompanying drawings.

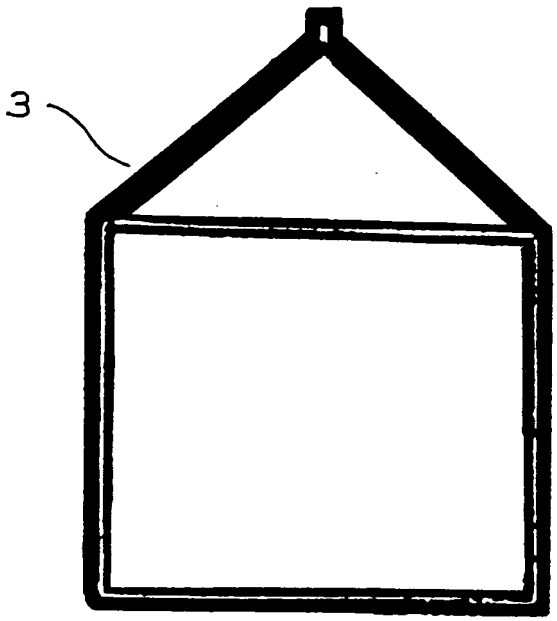

FIGURE 1

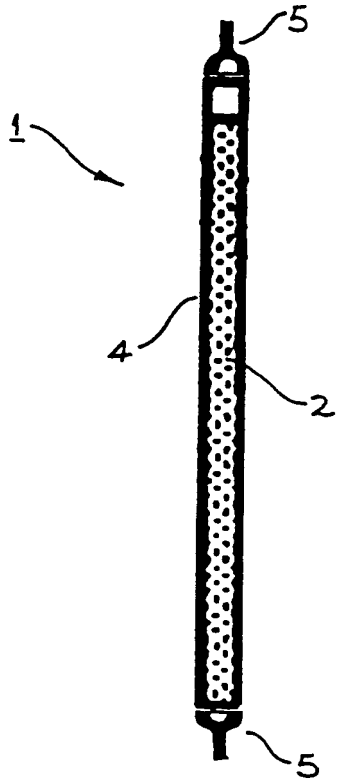

FIGURE 2

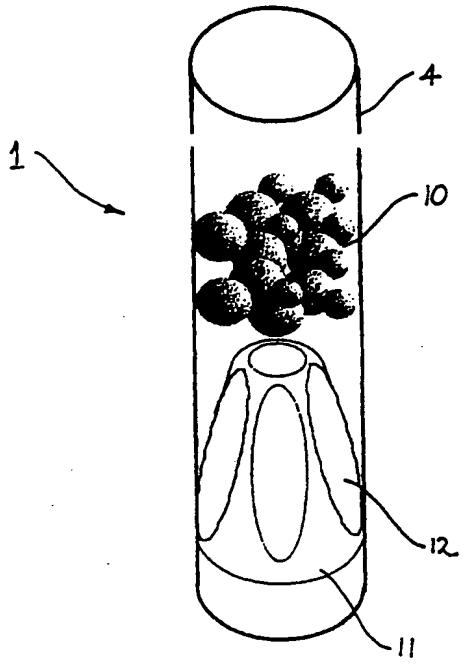

FIGURE 4

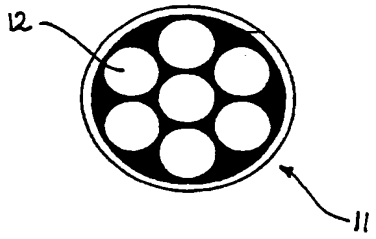

FIGURE 5

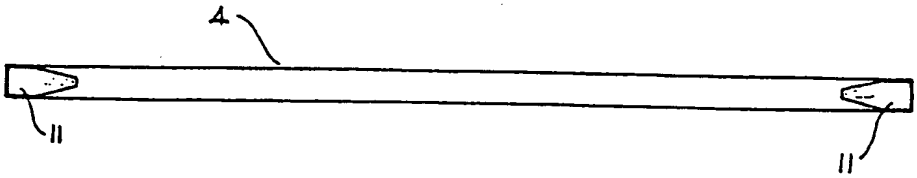

FIGURE 3

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/AU 97/00680

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl[6]: A23C 9/156, A23L 2/38, 2/385, 2/39, 2/56, A47G 21/18, B65D 83/06, 83/14, 85/72, 85/80

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC A23C 9/156, A23L 2/38, 2/385, 2/39, 2/56, A47G 21/18, B65D 83/06, 83/14, 85/72, 85/80

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
FSTA:straw: and (flavour: or flavor: or concentrat:) and (drink: or beverag: or liquid: or milk)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, 5094861, A (D'AUGUSTE ET AL.) 10 March 1992 entire document	1-5, 8-10, 12, 19-20, 24-25
X	US, 3717476, A (HARVEY) 20 February 1973 entire document	1-12, 19, 24
X	US, 3620770, A (HARVEY) 16 November 1971 entire document	1-5, 8, 10, 12, 19, 24

[X] Further documents are listed in the continuation of Box C

[X] See patent family annex

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INTERNATIONAL SEARCH REPORT

International Application No.
PCT/AU 97/00680

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, 3615595, A (GUTTAG) 26 October 1971 entire document	1-5, 8-12, 19-20, 24
X	GB, 2168027, A (JAMES M^{C}NAIR DALGLEISH) 11 June 1986 entire document	1-5, 8-10, 12, 19-20, 24
X	DE, 3731058, A (HEINZ KASTEN) 6 April 1989 entire document	1, 10
P, X	Derwent WPAT Online Abstract Accession No. 97-022538, DE, 29616646, U1 (KIS E) 5 December 1996 entire document	1-5, 10
X	Food Science and Technology Abstracts, Accession No. 83-12e0773, BE, 884962, 1980 abstract	1, 10

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No.
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Patent Document Cited in Search Report	Patent Family Member
US 3615595	JP 50003069
GB 2168027	GB 8431153 GB 8530446

END OF ANNEX